

## AMENDMENTS TO THE SPECIFICATION

Amend the specification as shown below.

[0005] The most popular single-coil guitar pickup in use is that standardly provided in the ~~Fender~~FENDER® Stratocaster~~STRATOCASTER®~~ (Fender Musical Instruments Corp., 1130 Columbia Street, Brea, Calif. USA). This pickup provides coveted response characteristics that yield great sensitivity and expression in response to the various ways the guitar strings are plucked, tapped, scraped and pinched with plectrums, fingernails, or any of a wide variety of other methods used by countless guitar players throughout the world.

[0006] There have been many attempts over the decades to cancel unwanted noise in pickups which provide the response of the ~~Fender~~FENDER® Stratocaster® devices but previous methods have introduced their own set of problems and shortcomings. The valued subtle nuances of the ~~STRATOCASTER~~Stratocaster® are often sacrificed when various noise cancelling techniques are employed.

[0009] Another popular single coil pickup is the Gibson Guitar Company's P-90® pickup (Gibson Guitar Corp., 1818 Elm Hill Pike, Nashville, Tenn. USA). The P-90® pickup is slightly different to the ~~Fender~~FENDER® single coil pickups in that it has a different magnetic system. The ~~Fender~~FENDER® pickups utilise rod magnets beneath each string as the core of the coil whereas the P-90® pickup utilises bar magnets disposed beneath the pickup coil with six adjustable steel screws as the core of the coil which conduct the magnetic field from the magnets to the strings. The coil of the P-90® has much more inductance than any ~~STRATOCASTER~~Stratocaster® pickup. Consequently this device generates more noise voltage than the ~~Fender~~FENDER® pickups.

[0010] It has been widely practiced that a side-by-side ~~Gibson~~GIBSON® style humbucking two coil pickup has one coil shorted or disconnected for the purpose of modifying the sound to resemble that of a ~~STRATOCASTER~~Stratocaster® single coil pickup. The disabling of the second coil also disables the noise cancelling ability of the pickup since it has been temporarily transformed into a single coil pickup. By providing a further noise sensing coil

of the present invention that is switched into circuit when the second coil is disconnected the facsimile STRATOCASTER~~Stratocaster~~® sound can also be noise free.

[0011] The STRATOCASTER~~Stratocaster~~® pickup typically has between 7,800 and 8,350 turns of 0.063 (42 gauge) wire to provide a DC resistance of between 5.6K ohms and 6.1K ohms and an inductance of 2.1 and 2.5 Henrys with a Q factor of approximately 2.8, whereas the P-90® pickup typically has in the order of 8,000 to 10,000 turns of 43 gauge wire to provide a DC resistance of about 8.3K ohms and an inductance of about 6.8 Henrys and a Q factor of 2.85.

[0012] Pickups having noise-sensing coils have been manufactured by me in accordance with my earlier Australian and United States Patents (AU 2081800; AU 711540; U.S. Pat. No. 5,668,520; U.S. Pat. No. 5,908,998; and U.S. Pat. No. 6,103,966). These pickups have emulated the sonic quality of a STRATOCASTER~~Stratocaster~~® pickup and utilise a noise-sensing coil with adequate noise-voltage/turns ratio achieved by forming the core of the noise cancelling coil of pins or rods made of magnetically permeable material, such as steel and by flanking each side of the noise sensing bobbin with unitary steel plates to boost the inductance.

[0013] While this arrangement has proved successful for the STRATOCASTER~~Stratocaster~~® style pickup it can be improved upon and it does not provide a noise cancelling solution the P-90® style pickups as the number of coil turns required to generate sufficient noise voltage is excessively high and the sonic degradation is correspondingly high due to the excessive capacitance of the coil.

[0021] The bobbin-coil assembly may be incorporated into a "Lace" type pickup (Fender-~~Lace~~FENDER-LACE®, Fender Musical Instruments Corp., 1130 Columbia Street, Brea, Calif. USA), which is a pickup of the type with dual coils disposed adjacent to and axially perpendicular to the axis of the magnets.

[0023] According to a further aspect of the present invention there is provided a guitar pickup arranged to emulate the desired sonic qualities of a FenderFENDER® single coil

pickup, said pickup including a string sensing pickup coil formed about a magnet or magnets numbering one or more extending through dielectric plates and a noise sensing bobbin-coil assembly as defined above and underlying said string sensing pickup coil.

[0025] In another aspect, this invention resides in a guitar pickup arranged to emulate the desired sonic qualities of a ~~Gibson~~GIBSON® P-90® pickup, the pickup including a string sensing pickup coil formed about a bobbin supporting a plurality of steel pole pieces extending in a axial direction medially through said bobbin toward the strings and beyond the base of said bobbin to a noise sensing bobbin-coil assembly as described earlier, the pole pieces being associated with magnetising means from which magnetic fields are transferred through the pole pieces to the strings.

[0033] In yet another aspect, this invention resides in a guitar pickup which emulates the desired sonic qualities of a ~~Stratocaster~~STRATOCASTER® pickup and having an upper string-sensing pickup coil formed about six rod magnets extending through dielectric plates and a noise-sensing bobbin-coil assembly of the present invention disposed beneath the string-sensing pickup coil.

[0039] In another aspect this invention resides broadly in a guitar pickup which emulates the desired sonic qualities of a ~~Fender~~FENDER® STRATOCASTER~~Stratocaster~~® pickup made in the form of a ~~Gibson~~GIBSON® side-by-side humbucking pickup arrangement, the guitar pickup comprising:

- a) a string sensing pickup coil formed about at least one ferrous pole or permanent magnet extending through dielectric plates or a freestanding bobbin, and
- b) a noise sensing bobbin-coil assembly being as defined above and positioned beside the string sensing pickup coil.

[0040] In a further aspect this invention resides broadly in a guitar pickup which emulates the desired sonic qualities of a side-by-side Gibson GIBSON® humbucking pickup, the guitar pickup comprising:

a) a pair of side by side string sensing pickup coils formed about at least one permanent magnet or ferrous pole extending through dielectric plates or freestanding bobbins; and

b) a noise sensing bobbin-coil assembly as defined above and positioned below the string sensing pickup coils.

[0041] FIG. 1 illustrates a typical Fender FENDER® STRATOCASTER ~~Stratecaster~~® single coil pickup configuration;

FIG 1b illustrates a typical Jaguar JAQUAR® (Fender Musical Instruments, Corp., 7975 North Hayden Road, Scottsdale, Ariz. USA) single coil pickup configuration;

FIG. 1c illustrates a single coil pickup of the STRATOCASTER ~~Stratecaster~~® type with a noise-sensing coil;

FIG 1d illustrates a single coil pickup of the Jaguar JAQUAR® type with a noise-sensing coil;

FIG. 2 illustrates a single coil pickup of the Gibson GIBSON® P- 90® type;

FIG. 2b illustrates a single coil pickup of the Gibson GIBSON® P-90® type with coil side-walls of steel;

FIG. 3 illustrates a single coil pickup of the Gibson GIBSON® P- 90® type with a noise-sensing coil formed with a laminated core;

FIG. 3b illustrates a single coil pickup of the Gibson GIBSON® P-90® type with upper coil side-walls of steel and a noise- sensing coil formed with a laminated core;

FIG. 3c illustrates a single coil pickup of the ~~Gibson~~GIBSON® P-90® type with upper coil side-walls of steel, a noise-sensing coil formed with a laminated core and a different magnet system;

FIG. 4 illustrates a single coil pickup of the ~~Gibson~~GIBSON® P- 90® type with a noise-sensing coil formed with a laminated core but utilising an alternate magnet system;

FIG. 5 illustrates a single coil pickup of the ~~Gibson~~GIBSON® P- 90® type with a noise-sensing coil formed with a moulded ferrite core;

FIG. 6 illustrates a single coil pickup of the ~~Gibson~~GIBSON® P- 90® type with a noise-sensing coil formed with a moulded ferrite core and an alternate magnet system;

FIG. 7a illustrates an alternate form of pickup according to this invention that is a ~~Lace~~LACE® design pickup;

FIG. 7b illustrates a cross section through the pickup of FIG. 7 a;

FIG. 8 illustrates a further noise-sensing coil according to this invention having a lamination of rectangular core pins;

FIG. 9 illustrates a typical configuration of a laminated coil bobbin for a noise-sensing coil according to one aspect of the present invention;

FIG. 10 illustrates a moulded ferrite coil bobbin for a noise-sensing coil according to one aspect of the present invention;

FIG. 11a illustrates a novel arrangement of side- by-side string sensing coil and noise sensing coil; and

FIG. 11b illustrates an arrangement in which the pickup is a conventional ~~Gibson~~GIBSON® style side-by-side (dual coil) humbucking pickup with the addition of a laminated noise sensing coil in accordance with the present invention.

[0042] It will be seen from FIGS. 1 and 1b that the basic ~~Fender~~FENDER® ~~STRATOCASTER~~Stratocaster® and ~~Jaguar~~JAGUAR® pickups are very simple and provide sonic characteristics known as ~~Fender~~FENDER® sound. These characteristics are somewhat subjective but are recognised by guitar players as characteristic attack and dynamic range, point of resonance and output level.

[0043] The basic ~~STRATOCASTER~~Stratocaster® pickup 10 illustrated in FIG. 1 is modified in the pickup 20 of the present invention illustrated in FIG. 1c, by providing a lower noise-sensing coil assembly 21 attached to the base 11 of the string-sensing signal coil assembly 12. The coils 12 and 21 may be connected in parallel but preferably they are connected in series to achieve the desired tone, so that the noise- voltage of the upper coil may be cancelled by inverting the phase of the lower coil 21 to be at 180 degrees opposed to the upper coil 12. The core 22 of the lower coil is made up of thin H-shaped laminations 23 of specially prepared sheet steel material which are stacked together to form a bobbin 24 in which a wire coil 25 may be wound. The bobbin 24 is completed by half-circle side caps 26 as illustrated. The laminations 23 are electrically insulated from one another suitably by a thin, non- conductive coating applied to the sheet material before the die stamping operation.

[0055] FIG. 7 illustrates yet another pickup 100 of the ~~Lace~~LACE® Sensor type as manufactured by Actodyne General, Inc. (Huntington Beach, Calif. USA) and in which six rod magnets 101 extend between opposed side mounted coils 102 and 103 wound about respective bobbins having a straight base 104 and a top provided with a first portion 105 which extends parallel to the base 104 across three of the magnets 101 then tapers to meet the base adjacent the last rod magnet 101 as illustrated. The opposed coils 102 and 103 are wound about these bobbins which are formed of steel laminations 107 providing end plates 106, or of moulded ferrite with integral end plates.

[0061] FIG. 11b illustrates an arrangement in which the pickup is a conventional ~~Gibson~~GIBSON® style dual side-by-side coil humbucking pickup with the addition of a laminated noise sensing coil in the type of the present invention to cancel noise when the pickup has either of its coils disabled to produce single coil sound. Similarly as described

above, the side by side humbucking pickup has pole pieces 151 in bobbins 152, bar magnet 155 and base plate 154. Laminated steel bobbin 156 is positioned beneath the pickup.